

EndoGreen®

CASE STUDY: J&B Greenhouses, Millgrove
Ontario, Canada



The new owners of J&B Greenhouses began looking at ways to improve efficiencies related to running a year-round greenhouse in Southern Ontario, Canada as heating a poly greenhouse is a major variable expense.

The greenhouse is a double layer, poly greenhouse approximately 56,000 square feet in size. The heating system is fuelled by natural gas and features twin boilers that were installed in 2004 when the greenhouse was built. The heating system comprises of roughly 17 kilometres of piping which runs on exterior walls, under benches and upper heat pipes for hanging baskets.

The heating system is filled with well water and automatically refilled by a well water system. The system is also a radiant heat system which features hanging temperature gages that are monitored and controlled by "Argus" software.

One of the largest costs J&B face is natural gas. The twin boilers work by running boiler 1 as stage 1 and 2 and if enough demand is placed on the system boiler 2, stage 3 and 4 kicks in as needed. Dependant on wind boiler 1 handles the operation until temperatures of -8 to -10 which is when boiler 2 is required.

EndoGreen was installed into the system in early March 2018 at the same time as a Bar-Cor CWS-55 corrosion inhibitor.

RESULTS

Due to the recent purchase of the property and change in site use historical data was only available from January 2017 to February 2018. This was used to create a baseline regression graph which the post-EndoGreen consumption can be compared.

16.31
%

TOTAL SAVINGS

FINANCIAL SAVING



\$11,782

CO₂e SAVING

85,200 kg

KEY INFORMATION

Installed: Feb 2018
Trial period: 12 Months

Greenhouse size:
56,000 sq ft

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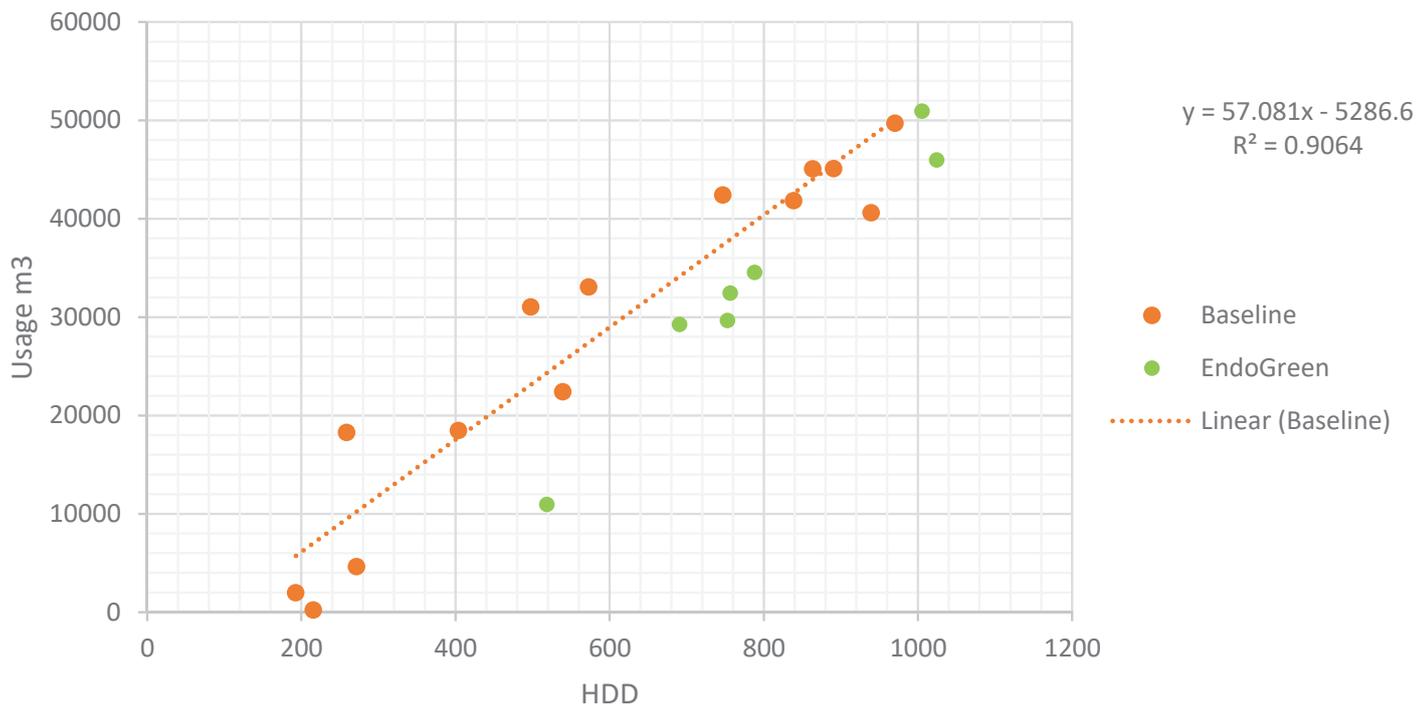
\$11,782

CO₂e SAVING

85,200 kg

RESULTS continued

EndoGreen - JB Greenhouse



The predicted consumption for the known HDD value for the billing month (from nearby weather station in Burlington Piers, Ontario) is taken from the above baseline trendline ($y = 57.081x - 5286.6$). What follows is a comparison with the actual consumption to identify a change in the consumption patterns. The greenhouse does have some variability but a pilot over 12 months will show an overall trend improvement.

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COMPARISON

Billing Month	HDD	Predicted Usage (m ³)	Actual Usage (m ³)	Difference (m ³)
Mar-2018	756.6	37900.885	32412	5488.89
Apr-2018	753	37695.393	29625	8070.393
Oct-2018	518.9	24332.731	10927.99	13404.74
Nov-2018	691	34156.371	29224.47	4931.901
Dec-2018	788.3	39710.352	34511.9	5198.452
Jan-2019	1005.5	52108.346	50925	1183.345
Feb-2019	1024.7	53204.301	45956.55	7247.751
TOTAL		279108.38	233582.9	45525.48

The usage in March – February 2019 had reduced by 16,31% compared to the baseline immediately before installation.

CONCLUSION

The installation can be seen to have saved 45,525m³ of gas. Based on a unit price of \$5.95/GJ the pilot saved \$10,087 in the first 12 months. The newly enforced carbon tax (\$20/tonne so approximately \$1/GJ) can show additional savings of \$1,695 giving a combined saving of \$11,782. The installation also saved 85,200kg of CO₂e the same emissions released by 18 medium sized family cars annually.

// Historically the temperature was staying around one degree lower than what the system called for at nights. Within two days after installing the Bar-Cor CWS-55 and EndoTherm we noticed that the temperature was reading within 0.1°C of the temperature requested from the heating system. //

Steve Hoover & Patricia Weise Hoover - Owners J&B Greenhouses